

PROPOSED AMENDED CLAIMS FOR 09/439,350

1 A furnace for cracking at least two hydrocarbon [feed] feeds to produce olefins, said furnace comprising:

(a) at least one fired radiant chamber, wherein said radiant chamber is divided into at least two separate independent radiant zones by a fired radiant chamber dividing means;

(b) at least one radiant burner in each said zone of said fired radiant chamber;

(c) a convection chamber in direct communication with said fired radiant chamber,

(d) [at least one independent process coil for each said separate independent radiant zone, wherein each said process coil extends through at least a portion of said convection chamber and extends into one of said separate independent radiant zones before exiting said furnace] at least two independent feed tubes, a first independent feed tube for directing a first hydrocarbon feed through said convection chamber and into a first independent radiant cracking zone and a second independent feed tube for directing a second hydrocarbon feed through said convection chamber and into a second independent radiant cracking zone;

(e) a flue for discharging flue gas located at the top of said convection chamber of said furnace;

(f) a means for independently controlling the radiant burners in each said separate independent radiant zone comprising regulation of fuel to said radiant burners.

2 A furnace for cracking at least four hydrocarbon [feed] feeds to produce olefins, said furnace comprising:

(a) at least two fired radiant chamber, wherein said radiant chamber is divided into at least two separate independent radiant zones by a fired radiant chamber dividing means;

(b) at least one radiant burner in each said zone of said fired radiant chamber;

(c) a convection chamber in direct communication with each said fired radiant chamber,

(d) (at least one independent process coil for each said separate independent radiant zone, wherein each said process coil extends through at least a portion of said convection chamber and extends into one of said separate and independent radiant zones before exiting said furnace] at least four independent feed tubes, a first independent feed tube for directing a first hydrocarbon feed through said convection chamber and into a first independent radiant cracking zone, a second independent feed tube for directing a second hydrocarbon feed through said convection chamber and into a second independent radiant cracking zone, a third independent feed tube for directing a third hydrocarbon feed through said convection chamber and into a third independent radiant cracking zone, and a fourth independent feed tube for directing a fourth hydrocarbon feed through said convection chamber and into a fourth independent cracking zone;

(e) a flue for discharging flue gas located at the top of each said convection chamber of said furnace; and

(f) a means for independently controlling the radiant burners in each said separate independent radiant zone comprising regulation of fuel to said radiant burners.

9. An improved pyrolysis cracking furnace having a convection chamber and a radiant cracking chamber wherein said improvement comprises dividing said radiant cracking chamber into at least two separate and independent radiant cracking zones by providing a dividing wall in said radiant cracking chamber, and separately and independently controlling the temperature in each of said separate and independent radiant cracking zones, and providing said cracking furnace with at least two independent feed tubes, a first independent feed tube for directing a first hydrocarbon feed through said convection chamber and into a first independent radiant cracking chamber and a second independent feed tube for directing a second hydrocarbon feed through said convection chamber and into a second radiant cracking chamber